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ABSTRACT

A model of teaching behavior as a role contract between teacher and student is proposed. The first dimension of the model, subject strategey, is based on the behaviors the instructor thinks are important and which he attempts to reward. His interests determine his choice of a didactic, generalist, or researcher subject strategy. The next two dimensions deal with the procedures of the classroom role. The first is the degree of student response. The next is concerned with relative clarity o r ambiguity of teachers' expectations. The final dimension is concerned with the degree of warmth shown by teachers to students. Indexes designed to measure student perception of the dimensions in the model were developed and related to various criteria in a large sample of 2-year college students. These criteria included faculty ratings, students' sense of progress, satisfaction, and college achievements. The indexes were related to these criteria in expected ways, the generalist, researcher, and warmth indexes typically having positive correlations, and ambiguity having negative correlations. (Author/RT)

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TEACHING STYLES: AN EXPLORATORY STUDY OF DIMENSIONS AND EFFECTS

Leonard L. Baird

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Educational Testing Service
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Teaching Styles: An Exploratory Study of Dimensions and Effects

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Abstract

An exploratory model of teaching behavior as a role contract is proposed. The model consists of three subject strategies--the didactic, generalist, and researcher strategies, and the dimensions of student response, ambiguity, and warmth. Indices designed to measure the dimensions in the model were developed and related to various criteria in a large sample of two-year colleges and students. These criteria included faculty ratings, students' sense of progress, satisfaction, and college achievements. The indices were related to these criteria in plausible ways, the generalist, researcher, and warmth indices typically having positive relations, and ambiguity having negative relations.

Teaching Styles: An Exploratory Study of Dimensions and Effects

Leonard L. Baird

Educational Testing Service

The characteristic ways in which instructors teach their classes can have important consequences for their students' learning, satisfaction and development. For example, an instructor in psychology could emphasize technical knowledge of his science, be concerned with the effects of psychology in the personal development of his students, or attempt to make his students think like researchers. The way in which he teaches his course helps determine what his students get out of it; his teaching style reflects his values and the goals he hopes his students will attain. This paper reports a study designed to assess teaching styles.

There have been many attempts to describe the teaching styles of instructors by such varied methods as systematic observation (see the review by Medley & Mitzel, 1963), rating methods (Remmers, 1963), and measures of social interaction (Withal & Lewis, 1963). (Ryans, 1967, has also reviewed some of the assumptions and results of studies of teacher behavior.) Recently there have been a number of attempts to describe the classroom environment by questionnaires asking students about classroom procedures and qualities (Astin, 1965; Pace & Baird, 1966). This latter approach seems to offer the advantage that the student describes what has occurred to him as he perceives it and indicates whether it was a characteristic part of his classroom experience. The assumption behind this approach is that the perceptions of students, the persons most affected by teaching styles, are useful descriptions of what goes on in the classroom. It is teacher behavior as it is <u>received</u>. Of course, we cannot ask students about everything they may have experienced. Classroom experiences vary greatly, and what is important to one student may not be

so to another. We must attempt to isolate the features of classroom teaching that are important for the majority of students.

An Exploratory Model of Teaching Styles

We therefore attempted to find the major dimensions of styles of classroom teaching which had been identified in previous research. While there appeared to be a bewildering diversity among these studies, there was actually some degree of consensus. From this review and from an intuitive analysis of teacher behaviors that are visible in typical school classes, a model of teacher-student interaction was developed. This model consists of several dimensions, based on the general approach or "style" of the instructor, as perceived by the student.

It is helpful if we conceive of the student-teacher relationship as an interpersonal system based on a role-contract between teacher and student. (Relevant role-theory has been extensively reviewed by Biddle and Thomas, 1966, and Biddle and Ellena, 1964.) The role-contract concept means that both instructors and students enter classrooms with certain expectations about the goals, procedures and rewards emphasized by both parties. The classroom situation can then be seen as the result of accommodation on both sides.

The first dimension of th model of the classroom situation is based on the behaviors the instructor thinks are important and which he attempts to reward. These are a reflection of his own values, i.e., his interest in facts, people, or ideas. These interests determine his choice of a didactic, generalist, or researcher subject strategy. The didactic strategy emphasizes detailed knowledge of facts and comprehensive coverage of the field. The generalist strategy emphasizes the application and impact of the ideas and facts of the field in the lives of students. The teacher scoring high on this strategy values general knowledge and insight into current problems. The researcher strategy emphasizes the interpretation and analysis of information, and the current topics and disputes in the field.

The next two dimensions of the model deal with aspects of the procedures of the classroom role. The first is the relevancy of student response to classroom activity, as reflected in the amount of time spent in direct teacher-student contact. It is concerned with the importance of student response to the goals of instruction--whether in questions directed to students, daily drills, quizzes, verbal reports, or class projects. Thus, it is concerned with the degree of teacher-student contact and not the warmth or emotional tone of the contact.

The next dimension is concerned with the clarity of the details of the role contract. What is expected, how much, and what are the payoffs? Thus this dimension is concerned with relative clarity or ambiguity of teachers' expectations, demands, or bases for evaluations (Baird, 1969). These are reflected in his clarity in making assignments, preparing students for tests, and awarding grades.

The final sector of the role contract deals with the reward system used by the instructor. We can arbitrarily classify rewards into utilitarian and affective rewards (Janis, 1959). The utilitarian rewards, in this case, are the grades given in the course. Of course we have included grades among our measures, and, by controlling for academic ability, hope to assess this dimension more precisely. The other dimension concerns the affective rewards given by instructors to their students. This dimension is concerned with the general degree of friendliness and warmth shown by teachers to students.

In sum, this paper explores the utility and heuristic potential of a model consisting of six dimensions of teaching styles: the didactic, generalist and researcher subject strategies, student response, ambiguity, and warmth. These dimensions were therefore related to students' evaluations of instruction, general sense of progress, satisfaction with college, and achievement.

Method

Sample

Data for this investigation came from a comprehensive follow-up study of 2670 students who took the ACT battery in 1965 and were completing their second year in 27 two-year colleges in the spring of 1967 (Baird, Richards, & Shevel, 1969). A comparison of students with and without follow-up data indicated that the two samples were quite similar. The students represented a wide range of ability and interests.

The Teaching Style Items and Indices

As part of the follow-up questionnaire, students were asked to respond to 33 true-false items dealing with teaching practices at their colleges, as reflected in their own experience. Items were concerned with examinations, classroom procedures, instructor-student interaction, assignments, and instructor attitudes, as perceived by the responding students. Typical items included the following: "Examinations emphasize recall of particular items of information about the subject," "There is some time given to student discussion in almost every class period," and "In many classes, it is hard for a student to know how well he is doing."

Items were scored to yield scores for the following brief indices, didactic, generalist, researcher, student response, warmth, and ambiguity. The indices were short measures (five items for didactic, generalist, and researcher, six items for the other three indices).

OTHER VARIABLES

Ratings of the Faculty

Students were asked to form a general overall impression of their teachers and rate them on their:

Overall ability as teachers
Knowledge of their subject matter
Ability as counselors or advisors
Ability to stimulate students to think
Ability to stimulate students to do reading in the field beyond class work
Ability to make their subject interesting

Students used a four point scale: somewhat inadequate, fairly capable, very capable, and extremely capable. In addition to individual item scores, we summed across the rating items to obtain an overall teacher rating score.

Sense of Progress

Five items asked students to indicate whether they felt their college experience had given them a detailed knowledge of their field, a broad understanding and appreciation of their field, a general comprehension of the philosophies, controversies, and ways of life that influence us today, an awareness of the needs of their community, and taught them skills and techniques directly applicable to a job.

General College Satisfaction

Students indicated their degree of satisfaction with various aspects of their college experience on a three point scale: dissatisfied, somewhat satisfied, and very satisfied. The areas covered were preparation for employment, preparation for further education, quality of teaching, and quality of social life. Responses on these items were also summed for an overall satisfaction score.

College Achievements

A checklist of extracurricular accomplishment yielded scores in the following areas: leadership, social participation, art, social service, science, business, humanistic cultural activity, music, writing, social science, speech and drama. Each scale consisted of 10 items ranging from common and less important accomplishments to rare and important ones (Richards, Holland, & Lutz, 1967). Typical items included: "Elected as one of the officers of a class (freshman, sophomore, etc.) in any year of college," "had drawings,

photographs, or other art work published in a public newspaper or magazine," "received a prize or award for a scientific paper or project," "conducted music which was publicly performed," "was editor of college paper, annual, magazine, anthology, etc.," "had one or more leads or minor roles in plays not produced by my university." A simple scale of recognition for academic attainment was also used. (Information about the development and statistical properties of these scales is reported in Richards, Holland, & Lutz, 1967). Students with high scores on one or more scales are assumed to have attained a high level of accomplishment which required complex skills, long term persistence, or originality, and which generally received public recognition.

Each student also reported his overall college grade average, by checking one of the following alternatives: D or lower, D+, C, C+, B, B+, A or A+. Scores from 1 to 7 were assigned so that a high score indicated high grades. Research by Richards and Lutz (1968) showed that such self-reported grades correlated .85 with college-reported grades.

Academic Ability

In order to control for academic ability in some of the analyses, the 1965 scores of the students on the ACT Composite were obtained. The ACT Composite provides a good estimate of students' academic potential (American College Testing Program, 1965, 1966).

Statistics

High, Moderate, and Low scoring groups on each index were defined after an inspection of the distributions of each scale. The cutting scores were arranged so that, as much as possible, the number of cases in each group so defined were approximately equal. The standard deviations of each group were also examined to ensure the appropriateness of analysis of variance techniques.

Using group on each index as the independent variable, and the other variables as dependent variables, analyses of variance were performed, following procedures outlined in Winer (1962).

Using the same groups, an analysis of covariance was also performed with total college grade point average as the criteria and ACT Composite scores as the covariate. This analysis was carried out to examine the relation of the teaching style indices to academic performance, while controlling for initial academic ability level.

Results

Students' ratings of their instructors were strongly related to the teaching styles of their instructors, as shown in Table 1. (Because of the many significant results, only the most salient and outstanding results will be discussed in these tables. In addition, since the sample size was so large, a .001 level of significance was used.) With the exception of the didactic score, every teaching style score was significantly related to all of the instructor ratings. The F-values indicated that ratings of instructors' ability as counselors or advisors, ability to stimulate students to think, and to do reading in the field beyond class work were most strongly related to the generalist index. Ambiguity was related to lower ratings on every item (or conversely, clarity was related to higher scores); ambiguity was especially strongly related to lower ratings of instructors' ability to make their subject interesting. Curiously, ratings of instructors' knowledge of their subject matter were most strongly related to the warmth index.

Insert Tables 1 and 2 about here

The teaching style indices were related to students' sense of progress in ways which suggest some validity for the indices. Thus, as shown in Table 2, the sense of gaining detailed knowledge of the field was most strongly related to the styles which, in various ways, emphasize knowledge of facts and the ability to quickly provide answers--the didactic emphasizing facts, the researcher emphasizing current knowledge, and student response requiring that the student be able to respond with an answer. (The generalist and warmth scales were also significant, but were at a lower level and are not discussed.) Student response was also strongly related to the sense of preparation for employment. (Other analyses by field showed that scores on student response were higher in vocational fields.)[1] Perhaps teachers in vocational subjects often schedule classroom question and answer periods. The results for the didactic scale could also be due to a greater emphasis on detailed facts in vocational curricula. However, this explanation does not hold for the researcher and generalist scales.

Progress toward a "broad understanding and appreciation" of one's field was appropriately related to the researcher and generalist scales, but was also related to the scales dealing with instructor-student interaction: student response and warmth. Perhaps students feel they have an appreciation of their field when in contact with instructors who involve them personally in the subject matter. Apparently gaining a broad understanding of the field is difficult when instructors are ambiguous. The sense of gaining a general comprehension of contemporary thought was most strongly related to the generalist scale, as expected, and the researcher scale, which reflects emphasis on current knowledge. Student

response is also positively related to gaining a comprehension of contemporary thought while ambiguity is negatively related. The sense of becoming more aware of the needs of one's community was most strongly related to the generalist scale, and also strongly related to the researcher scale. Student response and warmth, again possibly reflecting personal involvement, were also positively related to this rating.

Teaching styles were also related to students' satisfaction with many aspects of their college experience as shown in Table 3. Students felt better prepared for employment when taught by instructors who emphasized their responses in class (student response), emphasized current knowledge and the relevance of knowledge in their lives (researcher and generalist), who were friendly (warmth), and clear (negative ambiguity).

Insert Table 3 about here

By far the strongest relations to satisfaction with the preparation for further education and the quality of teaching were negative, with ambiguity. (Or stated conversely, clarity was associated with greater satisfaction with teaching and preparation for further education.) Otherwise, students seemed to feel better prepared for further education under the same conditions which were associated with greater satisfaction with preparation for employment. Greater satisfaction with teaching was associated with friendly instruction (warmth) which emphasized the impact of ideas in the lives of students (generalist). The researcher and student response scales were also related to this item.

The influences of teaching styles seemed to extend even to satisfaction with college social life and overall enjoyment of the college

experience. The pattern of greater satisfaction when instruction emphasized student personal involvement (student response and warmth), emphasis on current knowledge and the impact of knowledge (researcher and generalist) and clarity (ambiguity) also holds here.

Academic performance (uncontrolled for academic ability, which we shall examine later) was positively related to warmth, and negatively related to didactic or ambiguous teaching styles, as shown in Table 4.

Insert Table 4 about here

Teaching styles were generally unrelated to student nonacademic (extracurricular) achievement, with the exception of the researcher style, related to higher levels of social participation, social service, humanities achievement and social science achievement, and the didactic style, related to lower levels of humanities achievement and writing achievement. The positive associations of the research scale may be due to higher scores found for students in the humanities and social sciences. The didactic emphasis on detailed facts may hinder the more flexible approach needed in writing and humanities.

The results of the analysis of covariance described before are shown in Table 5. When academic ability was controlled, grades were unrelated to the didactic, researcher and student response indices, were positively related to the generalist and warmth indices, and were negatively related to the ambiguity index. Thus, grades seemed to be enhanced by friendly instructors concerned with the impact of their subject on the lives of their students. Grades seemed to be depressed by vague, contradictory instruction.

Insert Table 5 about here

Discussion

As Snow (1968) has emphasized, the ultimate goals of research on teaching are theories of teaching and conceptual models for the analysis of classroom behavior. Such theories and models should be tried out in a number of naturalistically varying situations. They should also deal with classroom behavior as part of behavior in general, rather than as a separate kind of behavior. Finally, they should not deal with behavioral variables that are so remote as to be unrelated, or so detailed and specific as to be ungeneralizable. In brief, models should be based on some naturalistic logical structuring of the domain of inquiry.

The model proposed in this paper seems to provide these features, at least to some extent. The data were collected in real-life settings--a sample of two-year colleges and students. (Of course, it should also be tried out in other naturalistic settings, and reconsidered and revised in accord with those studies.) By relating classroom behavior to general role theory and to studies of such other behavior settings as industrial organizations and graduate schools, the model treats teaching style as part of behavior in general. The basis of analysis--teaching style as it is received and interpreted by students--appears to be a useful approach. It is not so molecular as to make generalizations difficult nor so global as to be remote from the realities of teaching behavior. Finally, the model does seem to provide some logical descriptive framework for the area of teaching behavior, and can be used to relate different studies in the area. That is, there are a number of studies that have found results similar to the present one, which can be placed in the present framework. For example, factors similar to the warmth dimension have been found by

Coffman (1952), Creager (1950), Deshpande, Webb, and Marks (1970), Gibb (1955), Hall (1970), Ryans (1960), Solomon, Bezdeck, & Rosenberg (1963), and several of these studies found correlates or group differences consistent with the present results. Factors similar to Student Response have been found by Deshpande et al. (1970), Hall (1970), Isaacson et al. (1963), and Isaacson et al. (1964). Factors similar to the generalist and researcher dimensions have been found by Deshpande et al. (1970). Factors analogous to the didactic dimension have been reported by Coffman (1952), Gibb (1955), Isaacson et al. (1964), Ryans (1960), and Deshpande et al. (1970). Finally, factors similar to ambiguity have been identified by Solomon et al. (1963) and Deshpande et al. (1970). Of course, these studies have used different samples, and the factors studied were not exactly the same as the present dimensions. But there seems to be enough consistency, not only in the dimensions identified but in the pattern of the relations of the dimensions, to suggest some congruity with the present framework.

In this study, teaching styles appeared to have pervasive relations to students' reactions to their college experiences, particularly to their evaluations of the instruction they had received. Teaching styles also seemed to influence academic performance, but were generally unrelated to extracurricular accomplishments. Teaching styles therefore appear to have considerable educational importance.

There was only slight evidence for the differentiation of some of the styles. For example, although the generalist index had the highest relation to the sense of progress items most relevant to "generalists"--gaining a general comprehension of contemporary thought, and becoming more aware of the needs of one's community--the researcher index had relations nearly as high. Interestingly, the student response scale had the highest relations to various ratings dealing with preparation for

employment, and gaining a detailed knowledge of the field which would not seem directly relevant to the index. This result may have been due to the relatively high scores on this index for students in such fields as accounting, agriculture, and nursing, where student responses may be an important part of daily classwork.

The didactic index had few relations with most of the other variables, except the relevant rating of gaining a detailed knowledge of the field. Further analysis of the index is needed to see if this lack of relations is due to defects in the measure, or to the relatively neutral character of emphasizing facts.

The ambiguity scale, in contrast, had negative relations with most of the ratings. Ambiguity, at least among two-year college students, appeared to be almost synonymous with poor teaching. Related results have been found among employees in large organizations (Kahn et al., 1964) and graduate students (Baird, 1969). Ambiguity was related to psychological withdrawal and feelings of stress in those studies.

The results relating the indices to grades suggest that teaching styles may be an important variable in elevating or depressing student achievement, possibly through their power to involve the student.

Of course, to provide a better base for the present role-model framework it would be essential to relate the general perceptions of teaching styles to specific teacher behaviors, to the characteristics of teachers, and to such criteria as gains in achievement and other influences on students. It would also be useful to attempt to estimate the influence of teaching styles when student input, college characteristics, and personal experiences are controlled (Astin, 1970). And particularly, the interaction between student characteristics and the influence of the styles

should be studied. These various studies seem logical extensions of the present results.

In sum, these results provide some support for the model of teaching styles outlined at the outset. The indices need further refining to differentiate the dimensions and test their adequacy in defining the dimensions, but the results suggest that some dimensions are important parts of students' classroom experiences. While this study was exploratory, it did indicate that students' perceptions of teaching behavior are related to their satisfaction, sense of progress, and academic achievement. The model probably needs refinement, but it does seem a useful beginning.

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Footnote

[1]An analysis was made of the mean scores on the indices by the major field in which the respondents were studying. These results, available upon request from the author, are the basis for a number of comparisons in the following discussion.

Table 1

Summary of Analyses of Variance
Results: Teaching Styles by Ratings of Instructors

F-Value and Direction of Relation
Associated with Each Teaching Style Scale

Area of Rating	Didactic		Researcher		Generalist		Stud. Resp.		Warmth		Ambiguity	
	F	d	F	d	F	d	F	d	F	d	F	d
Knowledge of their subject matter . . .	.24		30.26*	+	19.23*	+	26.15*	+	36.97*	+	31.80*	-
Overall ability as teachers	4.51		51.26*	+	51.90*	+	49.96*	+	43.57*	+	44.07*	-
Ability as counselors or advisors . . .	7.56*	+	32.05*	+	57.73*	+	46.01*	+	32.45*	+	22.43*	-
Ability to stimulate students to think . .	.40		61.65*	+	84.26*	+	77.89*	+	57.18*	+	54.50*	-
Ability to stimulate students to do reading in the field beyond classwork	5.18		59.83*	+	84.03*	+	56.30*	+	38.40*	+	17.34*	-
Ability to make their subject interesting	.05		56.86*	+	51.22*	+	50.94*	+	58.16*	+	61.63*	-

d = direction of relation: + indicates positive, - negative

* significant beyond .001 level

($F_{2, 2669, .001} = 6.91$)

Table 2

Summary of Analyses of Variance
Results: Teaching Styles by Sense of Progress

Area of Rating	F-Value and Direction of Relation Associated with Each Teaching Style Scale											
	Didactic		Researcher		Generalist		Stud. Resp.		Warmth		Ambiguity	
	F	d	F	d	F	d	F	d	F	d	F	d
Do you think your college has given you a detailed knowledge of your field?	23.97*	+	23.54*	+	15.48*	+	37.76*	+	7.39*	+	3.82	
Has your college prepared you for employment (that is, taught you skills and techniques directly applicable to a job)?	6.91*	+	14.86*	+	13.89*	+	30.81*	+	6.12		.24	
During your college career, do you feel you have gained a broad understanding and appreciation of your field?	3.86		20.27*	+	19.02*	+	11.52*	+	14.41*	+	7.07*	-
Do you feel you have gained a general comprehension of contemporary thought -- the philosophies, controversies and ways of life that influence us today?	4.96		32.08*	+	46.35*	+	14.56*	+	3.57		10.26*	-
Has your college experience made you more aware of the needs of your community?	2.26		41.57*	+	50.11*	+	17.04*	+	9.61*	+	1.92	

d = direction of relation: + indicates positive, - negative

* significant beyond .001 level

($F_{2,2669}$ = 6.91)
.001

Table 3

Summary of Analyses of Variance
Results: Teaching Style Scales by Satisfaction

F-Value and Direction of Relation
Associated with Each Teaching Style Scale

	Didactic		Researcher		Generalist		Stud.Resp.		Warmth		Ambiguity	
	F	d	F	d	F	d	F	d	F	d	F	d
Preparation for employment	2.58		14.78*	+	16.44*	+	25.75*	+	14.57*	+	13.45*	-
Preparation for further education	.01		18.37*	+	14.95*	+	17.41*	+	23.78*	+	48.92*	-
Quality of teaching	.84		35.03*	+	48.16*	+	33.42*	+	57.81*	+	76.73*	-
Quality of social life	5.28		9.56*	+	18.38*	+	23.27*	+	11.75*	+	15.20*	-
Overall, have you found your college experience enjoyable?	.96		26.83*	+	27.80*	+	20.79*	+	36.18*	+	16.28*	-

d = direction of relation: + indicates positive, - negative

* significant beyond .001 level

($F_{2,2669}$ .001 = 6.91)

Table 4

F-Values and Direction of Relation Associated with Each Teaching Style Scale

	Didactic		Researcher		Generalist		Stud. Resp.		Warmth		Ambiguity	
	F	d	F	d	F	d	F	d	F	d	F	d
College GPA	9.68*	-	1.12		5.27		.16		16.53*	+	24.48*	-
Leadership Ach.	.46		1.57		1.11		1.82		3.11		1.18	
Social Participation	2.26		7.55*	+	.89		2.42		.80		6.76	
Art Ach.	2.14		3.94		.15		.18		.95		1.37	
Social Service	.01		9.47*	+	2.90		.98		1.74		2.42	
Science Ach.	.30		2.18		3.70		3.65		.49		4.04	
Business Ach.	.88		4.41		.98		3.72		4.14		5.26	
Humanistic-Cult. Ach.	8.83*	-	11.05*	+	1.77		2.26		1.51		.01	
Music Ach.	1.94		3.20		.83		.55		.92		1.31	
Writing Ach.	7.04*	-	4.41		4.72		1.14		1.55		.50	
Social Science Ach.	2.81		8.44*	+	1.39		.02		.19		4.29	
Speech & Drama Ach.	.52		4.02		.86		.81		.04		.80	

d = direction of relation: + indicates positive, - negative

* significant beyond .001 level

($F_{2,2669}{}_{.001} = 6.91$)

Table 5

Summary of Analyses of Covariance:

Teaching Styles by GPA; Academic Ability as Covariate

Teaching Style	Adjusted Means and Standard Deviations Low	Mod	High	F	d
Didactic	4.24 .39	4.13 .37	4.10 .39	1.88	-
Researcher	4.09 .39	4.17 .39	4.10 .38	1.23	
Generalist	4.01 .37	4.22 .41	4.10 .40	8.21*	+
Student Response	4.09 .38	4.11 .38	4.22 .41	2.58	+
Warmth	3.92 .36	4.19 .38	4.23 .40	13.68*	+
Ambiguity	4.22 .34	4.00 .33	3.90 .34	14.91*	-

d = direction of relation: + indicates positive, - negative

* significant beyond .001 level

($F_{2,2669}$ .001 = 6.91)